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CERTIFIED FOR PUBLICATION

IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA

SECOND APPELLATE DISTRICT

DIVISION ONE

In re

JOANN PARKS

On Habeas Corpus.

B296998

(Los Angeles County
Super. Ct. No. VA009503)

ORIGINAL PROCEEDING; petition for writ of habeas corpus, William C. Ryan, Judge. Petition denied.

California Innocence Project, Justin Brooks, Alex Simpson, and Raquel Cohen for Petitioner Joann Parks.

Duane Morris, Paul J. Killion, William S. Berman, B. Alexandra Jones and Holden Benon for The Innocence Network as Amicus Curiae on behalf of Petitioner Joann Parks.

Rob Bonta and Xavier Becerra, Attorneys General, Lance E. Winters, Chief Assistant Attorney General, Susan Sullivan Pithey, Assistant Attorney General, Louis W. Karlin and Michael R. Johnsen, Deputy Attorneys General, for Respondent Secretary of Department of Corrections and Rehabilitation.

Over 25 years ago, Joann Parks was convicted of murdering her three young children by setting a house fire that killed them. She seeks relief from these convictions via a petition for writ of habeas corpus, in support of which she offers evidence regarding various developments in fire investigation science and methodology since her trial. Parks argues the current scientific understanding of burn patterns and how fire behaves under certain conditions fatally undermines expert testimony offered by the prosecution at trial regarding the cause and origin of the fire at Parks's home, as well as the fire scene investigation on which the experts based those opinions. She contends this expert testimony therefore constitutes false evidence under Penal Code section 1473, subdivision (e)(1),¹ and that there is a reasonable probability it affected the outcome of her trial, entitling her to relief under section 1473, subdivision (b). Parks seeks relief on federal constitutional grounds as well, arguing that the prosecution presented its experts' opinions as infallible truth, that the unevolved state of fire investigation science at the time of trial prevented the adversarial system from exposing such testimony as flawed and unreliable, and that this rendered her trial so fundamentally unfair as to violate her right to due process.

In 2017 and 2018, the trial court held an evidentiary hearing on Parks's habeas petition, at which several expert witnesses testified regarding modern fire investigation standards and science and how the expert testimony offered at trial fares thereunder. The defense experts at this hearing echoed criticisms of the prosecution's expert trial testimony that Parks's trial expert had voiced decades earlier—albeit with additional scientific support that had since become available. Prosecution expert witnesses

¹ All further unspecified statutory references are to the Penal Code.

at the evidentiary hearing concluded that the prosecution experts' opinions at trial regarding the cause and origin of the fire were correct, even under modern standards, and that their methodology complied with current fire investigation guidelines and best practices. Thus, the same scientific debate between prosecution and defense experts the jury heard at trial continues today, only with each party's position bolstered with today's level of scientific knowledge. Such a debate does not establish that false evidence was offered at trial and does not warrant relief under section 1473, subdivision (b). Nor has Parks identified any industry standard or authority establishing that the challenged expert opinions regarding the cause and origin of the fire have been so "undermined by later scientific research or technological advances" that they constitute false evidence for the purposes of section 1473, subdivision (e)(1).

All defense and prosecution experts at the 2017/2018 evidentiary hearing did agree, however, that the prosecution's trial expert had been wrong in one respect: whether a "flashover" had occurred during the fire, something that would have affected his analysis of the fire scene. But Parks has not established that such testimony had a substantial material effect on the ultimate opinion of the prosecution's experts regarding the cause and origins of the fire or on her trial. Therefore, she has not met her burden of establishing that she is entitled to relief under section 1473, subdivision (b).

We note that Parks has identified real advances in fire investigation science, and our decision is not intended to suggest otherwise. But section 1473, subdivisions (b) and (e)(1) condition the availability of habeas relief on the effect such advancements likely would have had on the particular expert testimony at issue in the particular proceedings at issue. Here, given the extent to which

the same criticisms of the prosecution's expert testimony were litigated at the original trial, the continuing expert debate on these topics reflected at the evidentiary hearing, the lack of any authority rejecting some aspect of the original investigation as improper or incorrect by current standards, and the other evidence of guilt offered against Parks at trial, Parks has failed to establish by a preponderance of the evidence that she is entitled to relief under section 1473, subdivision (b). (See *In re Sassounian* (1995) 9 Cal.4th 535, 547.)

For largely the same reasons, we conclude she has failed to establish that the state of fire investigation science at the time of trial rendered her trial so fundamentally unfair as to violate federal due process. Although additional scientific support for the defense's expert testimony at trial would have been helpful to the defense in rebutting the prosecution expert's opinions, the absence of such additional support did not “ “necessarily prevent[] a fair trial.” ’ ” (*Duncan v. Henry* (1995) 513 U.S. 364, 370, fn. 1.)

Accordingly, Parks's petition is denied.

FACTS AND PROCEEDINGS BELOW

A. *The Lynwood and Bell Fires*

In 1988, the home in Lynwood where Parks lived with her husband, Ronald Parks, and her three young children, Jessica, RoAnn, and Ronald (Ronnie), burned down in a fire determined to have been accidentally caused by a coiled electrical cord underneath a pile of clothing (the Lynwood fire).² After the Lynwood fire, investigators explained to Parks how they believed the fire had started and cautioned her about such dangers.

² To avoid confusion, we refer to Parks's husband and children by their first names. No disrespect is intended.

Approximately a year later, in April of 1989, the Parks family moved into a small converted garage in Bell, California. Approximately a week after the family moved in, that home burned down as well (the Bell fire). Parks's three children died in the Bell fire, which ultimately led to Parks's prosecution and conviction on three counts of murder. Those convictions are the subject of the instant habeas petition.

B. *Parks's Murder Trial*

The following is a summary of the key evidence presented at Parks's 1992–1993 murder trial.

1. *Bell fire and investigation*

Parks testified that, on April 8, 1989, she was awoken by the sounds of her child screaming. When she opened her bedroom door, there was a hot blast of flames and smoke. Parks could not make it through the flames to reach her children's bedrooms on the other side of the home, so she ran out the patio door in her bedroom and awakened her neighbors, the Robisons, who lived in the main house on the same property.

Robert Robison attempted to go into Parks's home through the master bedroom door, but because of the heat from the fire, he could not get past that room. Shirley Robison and Parks went back to the Robisons' house and called 911. Another man attempted to search for Parks's children as well, but was likewise unable to get inside because of the intensity of the heat and smoke.

First responders arrived within minutes of the 911 call and found the house fully engulfed. Like the two men earlier, police officers were unable to enter the house. Firefighters extinguished the blaze within about 10 to 15 minutes.

The remains of Parks's three-year-old and 16-month-old daughters were found in their bedroom at the southeast corner

of the converted garage. One was on a bed and the other in a crib. The remains of Parks's four-year-old son were found in a closet in his bedroom at the northeast corner of the house. The children had died from thermal injuries and carbon monoxide inhalation. Parks's husband was working a night shift and was not home at the time of the fire.

William Franklin, a Los Angeles County Fire Department investigator, began an investigation of the fire scene and took photographs of the damage on the night of the fire, as well as on three occasions thereafter. Less than two weeks later, Ronald Ablott, a detective and member of the explosives and arson detail in the Los Angeles County Sheriff's Department became the lead investigator on the case. Ablott visited the scene of the fire twice in April 1989 as well as sometime in late June or July 1989. At some point during the investigation, Ablott became aware that the Parks family had lived at the home destroyed in the Lynwood fire, which Ablott had also investigated. Around late June or early July, Ablott and Franklin began treating their inquiry regarding the Bell fire as a criminal investigation.

2. *Expert interpretation of burn patterns to determine the Bell fire's area or areas of origin*

Ablott and Franklin testified that there were two distinct areas of origin for the fire: one in the north wall of the living room and one in the southeast bedroom near the foot of the bed where Parks's daughter was found.³ They reached this conclusion by interpreting burn patterns in the home. Specifically, they testified

³ Ablott investigated the area of origin in relation to both the living room and the southeast bedroom. Franklin investigated the area of origin only in relation to the living room.

that, due to the way fire burns—starting low and then moving up and outwards—a V-shaped burn pattern can point to the area of origin for a fire, as can the area of greatest fire damage.

With respect to the living room point of origin, Franklin and Ablott both testified that a V-shaped burn pattern and the locations of the greatest areas of fire damage suggested an area of origin on the north wall near the drapery hanging above the window. With respect to the southeast bedroom, Ablott testified that a V-shaped burn pattern coming from under the bed and the damage to the legs of a chair that was near the foot of the bed pointed to a second point of origin “on the floor near the edge of the bed.” Ablott believed that these burn patterns showed the living room and southeast bedroom fires were distinct—that is, that one did not cause the other.

Ablott and Franklin acknowledged that there could be other explanations for the type of burn patterns on which they were relying to identify the areas of origin, including “rollover,” “drop down,” and “flashover” fires. Rollover occurs when the intensity from the fire builds heat and smoke, and the heat and smoke hit the ceiling and mushroom. Drop down occurs when a combustible is superheated by items dropping from the ceiling to the floor. A flashover fire occurs when radiation and heat build up inside a closed space, heating the air inside of the space to a point when all of the combustibles in the immediate area burst into flames. Ablott and Franklin acknowledged that all three—rollover, drop down, and flashover—affect burn patterns and can create false indicators of an area of origin, including V-patterns and area of greatest damage. But Ablott and Franklin testified that they had ruled out the possibility of these phenomena explaining the burn patterns they analyzed. They ruled out the possibility of a rollover fire as a source of the V-patterns in either room by comparing the severity of the damage at various points, and ruled out the possibility of a drop

down fire causing the V-pattern in the bedroom because of the greater depth of char underneath the bed, an area that would have been protected, had drop down occurred. Ablott concluded flashover had not occurred, because there were items in the kitchen that had not ignited, but that would have been fully consumed by fire, had there been a flashover.

Ablott acknowledged that an “integral part” of his conclusion that there were two separate areas of origin was his determination that “no flashover occurred,” and that, if flashover had in fact occurred, he would need to reassess the fire scene with this in mind. He further testified, however, that he would still identify the southeast bedroom as an independent area of origin, even if he learned that flashover had in fact occurred.

The defense offered the expert testimony of private fire investigator Robert Lowe to explain how Franklin and Ablott misinterpreted the fire scene. Lowe opined that the investigators had incorrectly concluded the burn patterns indicated multiple areas of origin, and incorrectly identified the area of origin in the living room. Lowe concluded that ventilation—specifically, fresh air from the window, which had blown out during the fire—and the burning drapery caused the V-shaped burn pattern in the living room, and thus this pattern did not suggest an area of origin. Lowe concluded that the damage at the foot of the bed in the southeast bedroom was consistent with a drop down fire, rather than a separate area of origin, and that Ablott had incorrectly ruled this out. Lowe disagreed with Ablott regarding a second point of origin in the southeast bedroom on the additional basis that, if a fire had started there, he would have expected the box spring in the southeast bedroom to have been reduced to flat steel, because the mattress is built with very combustible material.

As had Ablott, Lowe explained that flashover can render burn patterns an unreliable basis on which to opine about the origin of the fire, because it can cause a V-pattern that does not indicate a separate area of origin. Lowe concluded that precisely this had occurred in the Bell fire and caused the V-patterns on which Ablott and Franklin relied in their investigation. Lowe testified that the southeast bedroom fire was an outgrowth of the living room fire, caused by flashover from the living room fire, and that Ablott had incorrectly ruled out flashover.

3. *Evidence regarding the cause of the fire*

Ablott and Franklin testified at trial that the Bell fire was incendiary, meaning intentionally set by a person. Lowe disagreed that the fire could be so classified and testified that a malfunction on the television in the living room was a possible cause of the fire. The prosecution and defense offered evidence on the following issues relevant to these two competing theories of causation: (1) expert testimony regarding whether the fire had multiple points of origin, discussed above; (2) expert testimony regarding a damaged electrical cord with curtains around it that the prosecution argued was a failed incendiary device; (3) evidence and testimony regarding whether the electrical appliances in the home caused any part of the fire; and (4) evidence and testimony relevant to whether the northeast bedroom closet in which Ronnie was found had been barricaded shut.

a. *Electrical cord and drapery*

The investigators found an electrical cord in the living room with clean cuts through its plastic insulation, exposing the copper wire. The cord appeared to have been wrapped with fabric. Dr. Robert Armstrong, a forensic electrical engineer examined the cord by X-ray and microscope and testified that the insulation

had been sliced by a sharp object such as a knife. Another witness for the prosecution, Captain Fuzzell, also testified that such precise cuts were not consistent with damage that could have been caused during the process of firefighter “overhaul,” meaning when firefighters systematically dig through combustible material after a fire, removing ash and debris in layers. More specifically, Fuzzell testified that it would be highly unlikely for shovels used in overhaul to create such cuts, and that overhaul would more likely cause abrasions.

An electrical cord covered in fabric had been the source of the Lynwood fire. Namely, investigators at the Lynwood fire scene recovered a coiled extension cord covered in a large pile of clothes. The extension cord was attached to an air conditioner. The insulation of the wire had melted or burned away, and the clothes had formed a large chunk of charcoal. Ablott—who was also an investigator assigned to the Lynwood fire—had determined this to be the area of origin for the Lynwood fire.

The forensic examination of the cord found in the Bell fire revealed no evidence of electrical damage, however, meaning it could not have actually started the Bell fire. Given the similarity with the Lynwood fire source, however, the investigators concluded that the cord was likely a crude, attempted incendiary device. The prosecution stipulated that the Lynwood fire was accidental, but argued that Parks learned about starting a fire in this way after the Lynwood investigation.

Lowe disagreed with the prosecution’s witnesses about the source of the cuts on the electrical cord. He believed shovels firefighters used during overhaul could have caused the cuts in the wire, although he acknowledged he had not examined the cord closely. Lowe believed the drapes on the north wall in the living room burned from the top down and fell to the ground, covering

the cord, and later becoming intertwined with the cord during the overhaul process.

b. *Electrical appliances as possible source of fire and “negative corpus”*

A television with a VCR, both on top of a wooden box with a drawer, an electrical fan, two boxes of games, and some clothing were located along the north wall of the living room. Parks had purchased the fan and the VCR the day before the fire.

Ablott and Franklin testified that, during their investigation, they ruled out these devices as possible causes of the living room fire. Franklin examined the television, VCR, and fan—although he acknowledged this was not an in-depth examination—and found nothing suggesting they had been the source of the fire. Ablott also examined the television, VCR and fan and concluded the burn damage on these devices was inconsistent with any of them having started the fire. Specifically, he noted that the television and fan appeared to have been burned from the outside, not the inside, as he would expect if a device malfunction had occurred. He also explained that they could not be the source of the fire because they were too far outside the area of origin.

Lowe disagreed with the investigators’ testimony and opined that an internal malfunction in the television set in the living room could have started a fire, which then spread to nearby drapes and the rest of the house. The defense also offered the testimony of Dr. Frederick Allen, an electrical engineer, who reviewed photographs from the fire scene and concluded that the type of television found at the scene was likely a Zenith model prone to malfunction that could likely have caused the fire. Allen acknowledged, however, that because the television had been destroyed, it would be impossible to determine whether it was in fact the cause of the fire. On rebuttal, the prosecution called a

former Zenith engineer, who testified that the television at the fire scene did not appear to be the type that Allen indicated was prone to malfunction.

In discussing how he had eliminated the appliances and electrical cord and drapery as possible sources of the fire, Ablott agreed when asked whether using this as a means to determine the cause of the fire was a methodology referred to as “negative corpus,” which Ablott clarified “mean[t] that you’ve eliminated all accidental causes” and “[y]ou are left with the only thing that’s there, the fire was caused by this.”

c. *Northeast bedroom closet door*

Ablott and Franklin determined that the door to the northeast bedroom closet where Ronnie’s body was found had been closed during the fire with a number of items blocking it, including a laundry hamper. Because the closet door only opened outward, they concluded this evidence supported that the child had been barricaded in the closet. They viewed this as further circumstantial evidence that the fire had been intentionally set.

The position of the closet door during the fire was the subject of much expert testimony and debate at trial. Franklin took pictures of the northeast bedroom before Ronnie’s body was found (but after there had already been substantial disruption of the scene by firefighters during overhaul), and these reflect the closet door being open with no laundry hamper or any remnants of a hamper near it. Based on a protected area of carpet in front of the closet door, however—that is, an area in front of the closet door, which appeared to be less burned than other areas—investigators nevertheless concluded the door had been closed and barricaded with a hamper during the fire. Through a reconstruction of the fire scene, they matched certain items found in the home, including a

pet dish and the hamper, to the shape of the protected area in front of the closet door. Their conclusion was also based on the condition of Ronnie's body when compared to the bodies of his siblings, the burn patterns and relative burn damage on various parts of the closet door and its hinges, and that there was less fire damage on the inside of the closet than on the outside of the closet.

Lowe opined that the evidence was inconsistent with the closet door being closed during the fire, or with items blocking the door from the outside. Lowe based his opinion in part on a comparison of the burn patterns found on the southeast bedroom closet door and wall and those on the northeast closet door and wall. Lowe explained that, had the northeast closet door been closed (like the southeast bedroom closet door), the doors and walls in both rooms would have had identical burn patterns, but instead they displayed a "remarkable difference." Lowe further based his opinion on the fact that the shelf in the northeast closet was missing and there were hangers on the floor. Lowe explained that a fire that travels into an open closet typically destroys the shelf supporting the hangers, causing everything on the shelf to drop to the floor. Lowe also disagreed with Ablott regarding the burn patterns on the hinges and the door frame, which, according to Lowe, suggests the door had been open. Finally, Lowe offered a competing interpretation of the burn patterns on the door, testifying that they were consistent with the hamper sitting alongside, not up against, the opened closet door. Lowe did not indicate that his disagreement with Ablott regarding the position of the northeast closet door was attributable to Ablott's belief that flashover had not occurred.

4. *Evidence related to Parks's physical state*

Witnesses who were at the scene testified that, unlike others who had approached the house during the fire, Parks did not have physical signs of having been closely exposed to a fire, such as a cough, or dirt or soot on her face. Some of these witnesses acknowledged that they were not focused on Parks's physical appearance when they observed her. At least one witness testified at trial without qualification that Parks was not dirty and did not have a cough on the night of the fire. Some of these witnesses were not asked about Parks's physical state until a year after the fire.

Lowe opined that Parks's apparent lack of exposure to heat or smoke could be explained by "backdraft," the same phenomenon that allows one to stand in front of a fireplace without becoming covered in smoke. Specifically, Lowe explained that air was flowing out of the bedroom towards the fire in the living room, creating "a draft from behind her as the air was drawn into the fire which was [by then] . . . venting out the north wall of the living room." This "backdraft" phenomenon would have drawn the smoke away from Parks when she opened the door. Because of this, Parks would not necessarily have smelled of smoke or developed a cough. Lowe further explained that when "you open a closed area that's choked with heat and venting . . . it pulls the air into it" and "creates . . . a balance of fuel, heat and air, and you get a blast of heat," in response to which Parks "would [have] turn[ed] quickly" as a matter of instinct.

5. *Evidence related to Parks's possible motive*

The prosecution offered evidence that the Parks family received or sought money as a result of both the Lynwood and Bell fires. Specifically, Ronald Parks testified he and his wife received about \$1,000 in cash donations after the Lynwood fire

and approximately \$30,000 cash in sympathy donations after the Bell fire. Ronald Parks also testified that Parks had received a \$30,000 settlement offer regarding the Bell fire, but his testimony is unclear whether he and Parks ever accepted that settlement. The Parks family also initiated lawsuits over both fires, which they dropped after Parks was criminally charged.

6. *Primary prosecution and defense arguments at trial*

In arguing the case to the jury, the prosecutor emphasized the circumstantial evidence that Parks had suffered no apparent exposure to smoke or heat; that a failed incendiary device was found in the Bell fire that appeared to employ a mechanism similar to the cause of the Lynwood fire; and that the door to the northeast bedroom closet was blocked during the fire. The prosecutor's closing arguments acknowledged that expert arson opinion evidence "can be inconclusive," and argued that the case had been proven beyond a reasonable doubt even if the jury entirely discounted the experts' opinions on the origin and cause of the fire. For example, the prosecutor argued that the wire and drapery evidence and evidence of the northeast closet door being barricaded would alone support a conclusion that the fire was deliberately set, regardless of whether the jury believed the expert testimony offered by the prosecution that there were multiple areas of origin.

The prosecution also argued that the defense theory about the television starting the entire fire—and, more specifically, Lowe's expert testimony supporting that theory—was unpersuasive. In so arguing, the prosecutor noted several times that the defense's theory being wrong did not prove the prosecution's case, but rather "reinforced" other evidence that was alone sufficient to prove guilt beyond a reasonable doubt. In this context, the prosecutor critiqued Lowe, in part based on Lowe's opinions about flashover (at one

point calling him “flashover Lowe”), but also based on arguments that Lowe had offered opinions beyond the scope of his expertise (at one point calling him a “ ‘one man jury’ named Lowe”). The prosecution’s closing arguments also focused on what it argued was false testimony by Parks herself, arguing that impeaching her on various points called her overall credibility into question.

Defense counsel argued that the evidence suggesting the television caused the fire raised at least a reasonable doubt that Parks intentionally burned down her house. Defense counsel also argued, based on the physical evidence and Lowe’s opinions, that the prosecution investigators’ conclusions about the closet door, the attempted incendiary device, and a second area of origin were wrong. And he argued that the absence of smoke or heat damage to Parks was consistent with her statements regarding the events of the night and the other evidence in the case.

C. Convictions and Procedural History Leading Up to Habeas Petition

The jury convicted Parks on all counts and, after a penalty phase, fixed the sentence for each murder at life without the possibility of parole. This court affirmed the judgment, and the California Supreme Court denied review. In 1999, this court denied Parks’s first petition for writ of habeas corpus, which alleged her conviction was based on insufficient evidence. (*Parks v. Superior Court* (Mar. 11, 1999, B129951).)

On November 6, 2015, Parks filed another petition for writ of habeas corpus in Los Angeles Superior Court, alleging her conviction was based on false scientific evidence in violation of both section 1473, subdivision (b) and Parks’s federal due process rights. Parks argued that advances in fire investigation since the time of trial undermined Ablott’s and Franklin’s testimony, rendering it false testimony under section 1473, subdivision (e)(1). According

to Parks, a competently trained investigator would now be required to classify the fire as “undetermined” rather than incendiary, and Ablott and Franklin were only able to reach a contrary conclusion by using investigatory methods that were tainted by bias and that would not withstand scrutiny under fire investigation guidelines developed since her trial. Parks also alleged that her due process rights were violated because current fire investigation science and best practices now make clear that Ablott’s and Franklin’s expert testimony was false and unreliable, undermining the fairness of the entire proceeding.

The court found that the petition was timely and stated a prima facie case for relief, and, after receiving a formal return and traverse, it ordered an evidentiary hearing.

D. Trial Court Evidentiary Hearing and Denial of Parks’s Habeas Petition

The superior court conducted an evidentiary hearing on Parks’s 2015 habeas petition in 2017 and 2018.⁴

Each side presented three expert witnesses at the hearing. Parks offered the testimony of Paul Bieber (defense expert Bieber or Bieber),⁵ Dr. Gregory Gorbett (defense expert Gorbett or Gorbett), and David Smith (defense expert Smith or Smith). Bieber is a former firefighter and arson investigator as well as founder and director of the Arson Research Project, an organization devoted to overturning wrongful arson convictions. He testified primarily regarding the current state of fire investigation science and

⁴ The court held approximately two hearing days each month over the course of 10 months.

⁵ Given the number of experts, for ease of reference, we use short form designations for each to indicate whether the witness was offered by the defense or the prosecution.

guidelines. Smith is a private fire investigator, former police officer and former public fire investigator. Smith opined on whether the 1989 Parks fire investigation was consistent with current fire investigation science, guidelines, and best practices. Gorbett is an associate professor of arson and explosive investigation and private fire investigator, and has done significant published research on the changes in fire pattern analysis. He testified regarding fire dynamics and opined on the cause and point of origin of the Bell fire.

The prosecution offered Brian Hoback (prosecution expert Hoback or Hoback), James Lord (prosecution expert Lord or Lord), and Edward Nordskog (prosecution expert Nordskog or Nordskog). Nordskog is the lead arson investigator for the Los Angeles County Sheriff's Department and one of approximately 40 people in the country certified as a master investigator by the International Association of Arson Investigators (IAAI). Hoback is a retired Bureau of Alcohol, Tobacco, and Firearms (ATF) agent, current ATF instructor, and private fire investigator. Lord is a university instructor in fire dynamics as well and a private fire and forensic engineer. All three prosecution experts (Nordskog, Hoback, and Lord) opined on the cause and origin of the Bell fire.

These experts offered conflicting expert testimony regarding virtually every key issue, including whether the original fire investigation complied with current fire investigation science and guidelines, whether there were multiple points of origin, whether the northeast bedroom closet door was closed during the fire, the significance of the damaged electrical cord and drapery, and whether the fire could be classified as incendiary. All experts agreed, however, that flashover had occurred in the living room, southeast bedroom, and northeast bedroom, and that Ablott had been incorrect in concluding otherwise. Still, whether the

occurrence of flashover and/or full room involvement undermined the overall conclusions of Ablott's and Franklin's investigations was another subject of disagreement between the prosecution and defense witnesses, as we explain in more detail below.

1. *Expert testimony regarding the current state of fire investigation science and guidelines*

a. *NFPA 921*

A key document capturing much of the new understanding of fire investigation science on which Parks relies in her petition is a publication by the National Fire Protection Agency entitled, "Guide to Fire and Explosion Investigation," commonly referred to as "NFPA 921." NFPA 921 was first published in 1992, and has been updated every three years since then. According to the document itself, "NFPA 921 is a peer-reviewed document describing the methodologies and science associated with proper fire and explosion investigations."⁶ "NFPA 921 brought together the best material from each of" the variety of "texts and treatis[es]" fire investigators had used up until it was first published. The document is "a guide that was slowly accepted by the fire-investigation community" but was not broadly accepted until 2000. It sets out guidelines and specifies that deviations from its guidelines do not necessarily indicate that an investigation is improper, although an investigator should be prepared to justify such deviations.⁷ In addition to many

⁶ The 2017 edition of NFPA 921 is an exhibit to Parks's petition. All quotations from the document are to that version.

⁷ "This document is designed to produce a systematic, working framework or outline by which effective fire and explosion investigation and origin and cause analysis can be accomplished. It contains specific procedures to assist in the investigation of

other more specific guidelines, NFPA 921 codified the use of the scientific method in fire investigations, advising that “[t]he investigator does not have a valid or reliable conclusion unless the hypothesis can stand the test of careful and serious challenge.” Both defense and prosecution witnesses at the evidentiary hearing testified regarding the contents and significance of NFPA 921.

b. *Role of flashover, full room involvement, and ventilation effects and burn patterns*

According to defense expert Smith, over the past three decades, a great deal of research has allowed fire investigators to better understand a fire’s behavior in complex fire scenes. Smith testified that burn pattern analysis—the primary method used by fire investigators in determining the cause and origin of a fire—is very subjective, and is often methodologically wrong in a complex fire scene. According to Smith, fire investigators did not truly understand or accept how flashover, full room involvement, and a “ventilation[-]control[led] fire”—that is, one in which all the fuel in a room has ignited and the oxygen entering from doors and windows mixes with flames to create areas of high heat—can affect burn patterns until well after Parks’s conviction. Any of these phenomena can make it harder to accurately interpret burn patterns. According to Gorbett, ventilation effects were discussed as far back as the 1940’s, but they were not well understood until 2008, when “the profession started looking very seriously at it.”

fires and explosions. These procedures represent the judgment developed from the NFPA consensus process system that if followed can improve the probability of reaching sound conclusions. Deviations from these procedures, however, are not necessarily wrong or inferior but need to be justified.”

NFPA 921 addresses these issues, cautioning fire investigators regarding the difficulties of accurately interpreting burn patterns after there has been flashover, full room involvement, or ventilation effects. As defense expert Bieber acknowledged, however, NFPA 921 guidelines do not prohibit interpreting burn patterns under such conditions. For example, NFPA 921 explains that “[d]uring full room involvement conditions, the development of fire patterns is significantly influence[d] by ventilation.” The document explains that, in such a ventilation-controlled fire, the fire damage is not always associated with a fuel package; the fire is instead burning wherever it can get the right mixture of oxygen to continue to burn. Thus, NFPA 921 cautions that when a fire is ventilation-controlled, it becomes very complicated for a fire investigator to determine whether damage is origin-related or due to ventilation.

Bieber, Gorbett, and Smith testified that exercises conducted since the time of the Bell fire also speak to the effects of flashover and ventilation effects on burn pattern analysis. For example, in a 2005 exercise (published in 2008), 53 investigators and students—only 20 of whom were fire investigators—were asked to determine the quadrant where a fire originated in a room that burned for one minute post-flashover (the Carman exercise). Only three of the participants were able to correctly identify the quadrant where the fire originated. Prosecution expert Hoback, however, described the Carman exercise as one that does not “accurately predict real world outcome[s],” and defense expert Smith acknowledged that the Carman exercise and other similar exercises do not represent the “typical scenario” or “typical fire scene investigation,” in that the participants were limited in their ability to gather information from other sources (such as by speaking with witnesses or moving items at the scene), and that “its purpose was simply to bring to light the

challenges with fire pattern interpretation.” Parks apparently conceded in her briefing below that the Carman exercise did not accurately reflect a true error rate, and that it instead exposed a “ ‘significant problem with determining a fire’s origin in a fully involved, ventilation[-]controlled fire.’ ”

The ATF later replicated the Carman exercise. The ATF burned three rooms, allowing each room to burn for different amounts of time post-flashover (30, 60, and 180 seconds). Between 30 to 35 experienced investigators participated in this study. Although the findings were not published, investigators believe only about five participants correctly identified the fire’s origin. The significant finding in this study was that the longer the fire was allowed to burn beyond flashover, the worse investigators became at being able to identify the area of origin.

In a 2013 study published in the IAAI journal, 600 professional fire investigators with varying levels of experience looked at a series of photographs of a room that burned post-full room involvement, and asked them to identify the area of origin. First the investigators were asked to identify the area of origin without measurable data. Then, the photographs were supplemented with measurable data. Prior to receiving the measurable data, 74 percent of the participants correctly identified the area of origin. The accuracy went up by only three percent after the participants received measurable data.

As an exhibit to her most recent petition, Parks also offered a 2019 study supporting that “ventilation changes fire damage and fire patterns within a structure.” This study concluded, *inter alia*, that pre-flashover burn patterns near exterior vents may be eliminated completely and are more difficult to distinguish from post-flashover damage.

c. *Multiple areas of origin*

NFPA 921 also contains “cautionary language” about difficulty in identifying multiple areas of origin. Specifically, it provides that “[m]ultiple fires are two or more separate, nonrelated, simultaneously burning fires. The investigator should search to uncover any additional fire sets or points of origin that may exist. In order to conclude that there are multiple fires, the investigator should determine that any ‘separate’ fire was not the natural outgrowth of the initial fire.” NFPA 921 provides several examples of how separate fires may not be the result of “multiple deliberate ignitions,” and notes that multiple points of origin become more difficult to identify after full room involvement. NFPA 921 guidelines suggest that, when trying to determine an area of origin, an investigator should consider: (1) witness information; (2) fire patterns; (3) arc mapping; and (4) fire dynamics. According to defense expert Bieber, under NFPA 921, an investigator should ensure areas of origin that appear to be different are “entirely separate and distinct,” since, especially after full room involvement, outgrowths of a single fire can look like separate areas of origin.

d. *Negative corpus*

The NFPA 921 also discusses an investigative methodology known as “negative corpus,” which the document defines as determining the cause of a fire “that has no evidence to support it,” based *solely* on ruling out all accidental causes within the area of origin. According to Bieber, negative corpus had been an accepted methodology in fire investigation at the time of the Bell fire, but NFPA 921 rejected it “out of hand” in 2011. The publication instructs that it is improper to infer the cause of a fire “that has no evidence to support it even though all other such hypothesized elements [have been] eliminated.” Because, under modern fire

investigation practices, the identification of an ignition source should be based on data or logical inferences drawn from data, if no such data or inferences support an ignition source and all accidental causes have been eliminated, the fire should be classified as “undetermined.”

e. *Bias in fire investigation*

The NFPA 921 cautions investigators to guard against expectation bias and confirmation bias in an arson investigation. Specifically, it provides that “[e]xpectation bias is a well-established phenomenon that occurs in scientific analysis when investigator(s) reach a premature conclusion without having examined or considered all of the relevant data. Instead of collecting and examining all of the data in a logical and unbiased manner to reach a scientifically reliable conclusion, the investigator(s) uses the premature determination to dictate investigative processes, analyses, and, ultimately, conclusions, in a way that is not scientifically valid. The introduction of expectation bias into the investigation results in the use of only that data that supports this previously formed conclusion and often results in the misinterpretation and/or the discarding of data that does not support the original opinion.” “Confirmation bias occurs when the investigator relies exclusively on data that supports the hypothesis and fails to look for, ignores, or dismisses contradictory or nonsupporting data.” NFPA 921 does not offer any recommendation about shielding investigators from certain information and permits consideration of circumstantial evidence to determine the classification of a fire. But NFPA 921 incorporates the scientific method into fire investigation, specifically by admonishing that an investigator “does not have

a valid or reliable conclusion unless the hypothesis can stand the test of careful and serious challenge.”

Defense experts testified regarding a 2017 American Association for the Advancement of Science study discussing the need to develop error rates in fire investigation and the impact of potentially biasing information. The report comments “that studies have shown that a fire investigator’s ability to determine the correct origin of a post-flashover fire may be no better than random chance.” The report also includes “a series of recommendations of how to shield fire investigations from outside information [and] the importance of separating criminal investigation from the forensic domain of origin cause investigation.” No evidence suggested this is the current standard for fire investigations, however.

2. *Expert testimony regarding whether the Parks investigation complied with current fire investigation science and NFPA 921 guidelines*

Defense expert Smith testified that the 1989 Bell fire investigation did not conform to NFPA 921 guidelines or best practices. Based on the trial testimony and photographs of the scene, Smith estimated that Parks’s house was fully involved for 6 to 10 minutes, and that this, as well as flashover and ventilation effects, prevented burn patterns or area of greatest damage from providing a reliable basis for identifying the Bell fire’s area of origin. Smith also did not believe that the effect of full room involvement on determining the area of origin was understood at the time of the investigation. Thus, according to Smith, Ablott’s and Franklin’s interpretations of post-flashover, post-full room involvement burn patterns from a ventilation-controlled fire as a means of identifying the fire’s area of origin did not comply with NFPA 921 or comport with modern fire investigation science.

Smith further opined that the original investigators also had not properly examined and eliminated the potential electrical sources of ignition under NFPA 921 guidelines, because they had done so via a visual inspection, rather than by having them examined by a qualified electrical engineer, as NFPA 921 recommends. Smith testified about the practice of “arc mapping,” one of the best practices discussed in NFPA 921, a technique that can point to an area of origin through an examination of electrical circuitry. The original investigators did not do arc mapping in assessing potential electrical sources of the Bell fire. They also did not consider or eliminate various electrical wires in the house as possible ignition sources.

Smith opined that the Parks investigation had also been tainted by expectation or confirmation bias, because “the steps weren’t followed that should have been followed in [NFPA] 921,” such as “reconstructing the scene to make a determination of what was there and items such as that throughout the case.” For example, Smith testified that investigators showed bias in determining that the northeast bedroom closet door was closed and blocked during the fire because Smith thought it could not be “scientifically indicated which way [the closet door] was.”

Contrary to defense experts’ testimony, prosecution expert Nordskog testified that NFPA 921 did not substantially change the methodology of fire investigation. He acknowledged that in the previous 25 years fire scientists had contributed to a better understanding of certain topics such as ventilation effects, and had debunked some “obvious myths,” but viewed it as an “exaggeration” to say that “a lot” of what investigators understood before NFPA 921 was wrong. For example, the issue of bias has long been acknowledged, and NFPA 921 simply amplified it.

Nordskog believed that Ablott's methodology in investigating the Bell fire was sound, even measured against current practices and the NFPA 921 specifically. Ablott, who like Nordskog was certified as a master investigator by the IAAI, reached a "reserved opinion" via "a very slow and detailed process" that "was quite detailed and deliberate." Nordskog did not believe Ablott's investigation reflected that Ablott had "succumbed to any of the issues that this industry was [plagued with]" at the time, "[t]he most common [of which] is untrained investigators. I think he was very well trained for his task and demonstrated it." Moreover, Ablott had an advantage over the experts reviewing the investigation retrospectively, because he was able to examine the scene personally. Nordskog summarized his assessment of the original investigation, saying, "[I]t was a long time ago, and I realize we have gotten better in our business. There are still huge flaws in our business. So I expected to find significant errors because I have looked at cases from that era from other agencies and from my own in our era. I was shocked at the detail, length and quality of the investigation."

Prosecution expert Hoback similarly testified that neither NFPA 921, nor any later scientific research, undermined the analysis of the original investigators. He explained, for example, that flashover and ventilation effects were known and understood at the time of the Bell fire—and were addressed at the trial. NFPA 921 merely memorialized best practices in this regard. He also did not think that arc mapping was necessary in this case, as it is generally most useful in fires where the structure has been completely destroyed. Moreover, Hoback did not believe that NFPA 921's discussion of negative corpus was relevant, because it cautions against determining that a fire was incendiary based *solely* on a process of elimination. Here, Hoback testified, the

investigators had reached their conclusions based both on eliminating potential accidental causes and on additional evidence suggesting the fire was incendiary, such as the multiple areas of origin and the blocked closet door. Hoback further testified that Ablott had used the greatest area of damage as only one indicator in determining the area of origin, which was consistent with NFPA 921; that considering the presence of a failed incendiary device in determining the cause of a fire likewise complied with current best practices; and that Ablott's approach to eliminating the electrical appliances as potential sources of the fire was consistent with NFPA 921 guidelines.

Finally, prosecution expert Lord likewise opined that scientific research since 1989 had not undermined the original investigators' conclusions. He believed that investigators at that time adequately understood the effects of flashover and ventilation and the impropriety of employing pure negative corpus methodology. For example, Lord pointed to a number of resources predating the Parks fire discussing the significance of flashover and ventilation, and noted that the calculations he used to analyze the fire in this case have been accepted since the 1950's and 1960's.

3. Testimony regarding the cause and areas of origin of the Bell fire

Defense expert Gorbett opined on the cause and area of origin of the Bell fire. Gorbett believed that it was not possible to conclude whether there were multiple areas of origin, and that the proper classification of the Parks fire should be "[u]ndetermined" (rather than incendiary). Gorbett concluded that, because the Bell fire was ventilation-controlled and there had been full room involvement in the kitchen, living room, and northeast and southeast bedrooms, burn patterns and damage could not provide a reliable basis for identifying the cause or origin of the fire. According to Gorbett,

under such circumstances, it “becomes very complicated for a fire investigator to discriminate in his interpretation of what caused the damage. Was it origin related or was it because of all of its ventilation and better burning.” Gorbett acknowledged that “full room involvement does not “obscure[] and eliminate[] everything” one can deduce from a burn pattern, but rather “starts to make it more difficult” and “then we add in the variables of the window[s] and the big [air] flow paths . . . and we are going to start to see it become more and more complicated.” Given these conditions, Gorbett opined that the area of origin could not be narrowed any further than the kitchen, living room, and northeast and southeast bedrooms, and that “[w]e cannot scientifically determine there were multiple fires” within that boundary or that there were not.

Gorbett also performed a Computational Fluid Dynamic Simulation (CFD), based on which he further opined that the evidence was inconsistent with the Bell fire having multiple areas of origin. Gorbett explained the CFD approach included building a geometry model of the Parks’s home, modeling fire growth and size, and monitoring the heat transfer and temperatures for comparison to the physical damage that occurred during the fire. This simulation sought to “evaluate the governing physics of the fire spread throughout the house,” “consider the alternative hypotheses regarding one or multiple origins,” and “analyze post-fire damage in comparison to the predicted heat transfer from the various computer simulations to the physical evidence from the Parks’[s] home.” Gorbett ran 50 simulations which considered two hypotheses: (1) a single origin in the living room, or (2) multiple origins with one origin in the living room and the second origin in the southeast bedroom. Based on these simulations, Gorbett opined that although the fire damage within the structure appeared similar in both the single and multiple

origin hypotheses, “a single origin within the living room better replicated the actual fire damage in the Parks’[s] home and better correlated to the witness statements and timeline,” whereas “[t]he multiple origin theory did not accurately reflect the witness statements or the physical evidence after the fire.”

Gorbett disagreed that the level of fire damage to the mattress in the southeast bedroom suggested an area of origin in that room, because “[t]he single origin in the living room would have caused the same degree of damage and loss of mass to the bed in the southeast bedroom as that identified in the actual damage.” According to Gorbett, the CFD findings regarding the damage to the bed in a single origin fire “is contradictory to the conclusion put forward by” prosecution experts Hoback, Lord, and Nordskog at the evidentiary hearing.

Prosecution experts Hoback, Lord, and Nordskog each independently concluded that there had been multiple points of origin in the Bell fire, consistent with what Ablott had identified in the original investigation: one in the southeast bedroom and one in the living room. According to both Hoback and Lord, that there had been flashover and full room involvement meant only that an investigator needed to exercise more care in interpreting burn patterns, not that these patterns could no longer reliably indicate points of origin. Hoback and Lord both opined that the burn patterns in the southeast bedroom showed an area of origin near the foot of the bed that was “definitely” separate and distinct from the one in the living room. Both disagreed with Gorbett that all patterns in the southeast bedroom were the result of ventilation effects. Hoback further agreed with Ablott that, although the fire did appear to have spread from the living room to the southeast bedroom, this was not the cause of the southeast bedroom fire.

Based on the multiple areas of origin, the presence of what they viewed as a failed incendiary device, and evidence that the northeast closet door had been blocked, Hoback, Lord, and Nordskog each independently concluded that the Bell fire should be classified as incendiary.

At the evidentiary hearing, the prosecution also offered a 2016 declaration by Ablott, in which Ablott confirmed that he was not recanting any of the opinions he offered at trial.

4. *Evidence regarding the closet door*

Defense expert Gorbett testified that Ablott and Franklin incorrectly concluded that the northeast closet door had been closed during the fire. Gorbett opined that the evidence did not permit an investigator to determine one way or the other whether this was the case, and there was “too much evidence that is inconsistent with” that conclusion. He also specifically disagreed—as Lowe had at trial—that the post-fire appearance of the hinges indicated the door was closed. He further testified that the “protected area” in front of the closet door, based on which Ablott and Franklin had concluded the door was blocked by a hamper, could be explained by hot gas layers moving down during the fire, debris falling in front of the door during the fire, poor housekeeping, or ventilation flow paths.

Prosecution expert Nordskog, by contrast, opined that there was “clear physical evidence” that the closet door was blocked at the time of the fire. For example, Nordskog specifically agreed with the initial investigator’s conclusion that the condition of Ronnie’s body—primarily that his hair remained intact—indicated that the door was closed during the fire.

5. *Testimony regarding the electrical cord and drapery*

Prosecution experts Hoback and Nordskog both concluded, based on the forensic examination conducted at the time of trial, that the cuts in the cord and the material wrapped around it could not have been the result of overhaul, and that the cord had instead been tampered with. They therefore viewed the electrical cord as a failed incendiary device. The defense experts did not testify at the evidentiary hearing regarding the source of the damage to the wire or whether it was part of a failed incendiary device.

E. *Superior Court Denial*

After the evidentiary hearing, the superior court issued a detailed written order rejecting Parks's argument that Ablott and Franklin had offered false expert testimony that warranted relief under section 1473, subdivision (b), and denied the petition.

The court observed that Parks's arguments regarding all the allegedly false testimony except Ablott's conclusion that flashover did not occur "amount[ed] to nothing more than disagreeing with Ablott's conclusions, and attempting to re-litigate them before th[e] court." The trial court reasoned that Parks's experts at the evidentiary hearing had "echoed the defense theories at trial" but had not shown that improved scientific understanding of things like flashover and ventilation effects undermined the original investigators' conclusions. The court further concluded that the record did not support that the experts' conclusions were the product of bias or improper negative corpus methodology. Instead, the investigators had drawn logical inferences from the evidence regarding the cut electrical wire, electrical appliances, and closet door, and had done so in a manner Parks had not shown to be undermined by subsequent scientific advances in fire investigation.

The court further concluded, however, that Ablott’s trial testimony that flashover had not occurred was “false” within the meaning of section 1473, subdivision (e)(1), since all of the evidentiary hearing experts agreed that flashover had occurred. But this testimony was not substantially material, the court concluded, because the prosecution experts were able to read the burn patterns despite the occurrence of flashover and they “still confirmed all other aspects of the original investigation.” The court did not separately address Parks’s due process claim.

F. *Current Habeas Petition*

Following the superior court denial, Parks filed her habeas petition raising false evidence and due process claims with this court. We summarily denied the petition, and Parks then filed an original petition in the California Supreme Court raising the same claims. (*In re Joann Parks* (Nov. 24, 2020, S258858).) The Supreme Court issued an order to show cause returnable in this Court.⁸ The instant writ proceedings followed.

DISCUSSION

“Where, as here, the superior court has denied habeas corpus relief after an evidentiary hearing (viz., the hearing held on the order to show cause ordered in response to petitioner’s first habeas corpus petition) and a new petition for habeas corpus is thereafter presented to an appellate court based upon the transcript of

⁸ While Parks’s petition was pending in the California Supreme Court, Governor Gavin Newsom issued an order commuting Parks’s sentence. Because Parks was in custody at the time she filed her habeas petition, and remains in constructive custody even after her release on parole, the habeas corpus custody requirement is satisfied. (See *In re Hernandez* (2019) 33 Cal.App.5th 530, 542.)

the evidentiary proceedings conducted in the superior court, ‘the appellate court is not bound by the factual determinations [made below] but, rather, independently evaluates the evidence and makes its own factual determinations.’ [Citation.]” (*In re Resendiz* (2001) 25 Cal.4th 230, 249, abrogated on other grounds by *Padilla v. Kentucky* (2010) 559 U.S. 356, 370.) However, “any factual determinations made below ‘are entitled to great weight . . . when supported by the record, particularly with respect to questions of or depending upon the credibility of witnesses the [superior court] heard and observed.’” (*In re Resendiz, supra*, at p. 249.) Conclusions of law and resolution of mixed questions of fact and law are subject to independent review. (See *In re Cox* (2003) 30 Cal.4th 974, 998.)

A. *Section 1473, subdivision (e)(1) and False Expert Testimony*

Section 1473 permits “[a] person unlawfully imprisoned . . . [to] prosecute a writ of habeas corpus to inquire into the cause of the imprisonment or restraint” for various reasons. (§ 1473, subd. (a).) Under section 1473, subdivision (b), a petitioner is entitled to relief where he or she can prove, by a preponderance of the evidence (*In re Sassounian, supra*, 9 Cal.4th at pp. 546–547), that (1) “[f]alse evidence” was introduced against him or her at trial, and (2) that the false evidence was “substantially material or probative on the issue” of his or her guilt. (§ 1473, subd. (b)(1).)

1. *Expert testimony under section 1473, subdivision (e)(1)*

In 2015, section 1473 was amended to clarify the circumstances in which expert testimony may qualify as “false evidence” under the statute. Following that amendment, section 1473, subdivision (e)(1) provides that “ ‘false evidence’

includes opinions of experts that have either been repudiated by the expert who originally provided the opinion at a hearing or trial or that have been undermined by later scientific research or technological advances.” (§ 1473, subd. (e)(1).)

The Legislature added this language following a California Supreme Court decision, *In re Richards* (2012) 55 Cal.4th 948 (*Richards I*), which held that, under the pre-2015 version of section 1473, when “posttrial advances in technology have raised doubts about [an] expert’s trial testimony” but have not “conclusively prov[en] that testimony to be untrue,” the expert testimony is not “‘false evidence.’” (*Richards I, supra*, 55 Cal.4th at p. 952.) Justice Liu wrote a lengthy dissent in *Richards I*, explaining his view that “there is no reason to treat expert testimony differently from lay testimony under section 1473[, subdivision] (b)” and that “‘false evidence’ within the meaning of section 1473[, subdivision] (b) is established when a petitioner shows by a preponderance of the evidence either the falsity of an expert’s testimony or the falsity of an underlying fact essential to an expert’s testimony.” (*Richards I, supra*, at p. 971 (dis. opn. of Liu, J.)) Justice Liu’s dissent explains this alternative approach is necessary in order to place expert testimony on equal footing with percipient witness testimony under the statute, which does not differentiate between the two: “Just as the truth or falsity of eyewitness testimony under section 1473[, subdivision] (b) depends on the truth or falsity of underlying facts concerning the witness’s perceptual abilities, the truth or falsity of expert testimony depends on the truth or falsity of underlying facts essential to the expert’s inferential method and ultimate opinion.” (*Richards I, supra*, at p. 973 (dis. opn. of Liu J.))

“[I]t is apparent that the Legislature agreed with the dissent’s conclusion” in this regard, and that the 2015 amendment was

intended to assure courts “treat lay and expert opinion equally in determining whether the testimony of an expert witness at trial satisfies the false evidence language of section 1473.” (*In re Richards* (2016) 63 Cal.4th 291, 311 (*Richards II*).) The legislative history of the amendment reflects that the Legislature specifically agreed not only with this conclusion of the *Richards I* dissent, but with the dissent’s reasoning as well (*ibid.*)—namely, that both lay and expert testimony may be repudiated, and that “underlying facts essential to the expert’s inferential method and ultimate opinion,” just like “underlying facts concerning [a lay] witness’s perceptual abilities,” may be objectively disproven. (*Richards I, supra*, 55 Cal.4th at p. 973 (dis. opn. of Liu, J.).)

Following the 2015 amendment, Richards filed a new writ petition that again made its way to the California Supreme Court. The Court concluded that the expert testimony at issue met the definition of false evidence under newly-minted section 1473, subdivision (e)(1). At trial, the expert had opined, based on a photograph of a lesion on the victim’s body and Richards’s dental records, that the lesion was a bite mark matching Richards’s unique dentition, and that this dentition was shared with approximately one or two percent of the population. (*Richards II, supra*, 63 Cal.4th at p. 305.) Years later, technology not available at the time of trial was used to correct an angular distortion in the photograph, and based on this corrected photograph, all experts testifying at the habeas hearing—including the original testifying dental expert himself—“*exclude[d]* petitioner’s teeth as the source of the lesion.” (*Id.* at p. 310, italics added.) In addition, the original testifying expert acknowledged that he had no scientific basis for his initial estimate of the number of individuals who shared Richards’s dentition. The Supreme Court concluded that Richards had established the expert’s testimony was false evidence under both

of the categories described in section 1473, subdivision (e)(1): The expert had repudiated the testimony, and an essential factual basis for the testimony—the accuracy of the photograph—had been undermined by advances in technology. (*Richards II*, *supra*, at pp. 309–310.)

Thus, in order for expert testimony to be false under section 1473, subdivision (e)(1) and *Richards II*, unless the expert repudiates the testimony, the petitioner must show that “‘underlying facts essential to the expert’s inferential method and opinion’” no longer support that method or opinion in light of new scientific understanding or technology. (*Richards II*, *supra*, 63 Cal.4th at p. 311 [discussing 2015 amendment and quoting Sen. Rules Com. Off. of Sen. Floor Analyses, Unfinished Business Analysis of Sen. Bill No. 1058 (2013–2014 Reg. Sess.) as amended June 4, 2014, p. 3.]

2. Substantial materiality

After establishing that false evidence was presented at trial, a habeas petitioner seeking relief under section 1473, subdivision (b) must also show that the evidence was “substantially material or probative” on the issue of his or her guilt. (§ 1473, subd. (b)(1).) In determining whether this is the case, “the crucial question is . . . not whether, without the false evidence, there was still substantial evidence to support the verdict” (*Richards II*, *supra*, 63 Cal.4th at p. 312), but rather whether the false evidence is “of such significance that with reasonable probability it may have affected the outcome of the trial.” (*In re Wright* (1978) 78 Cal.App.3d 788, 814 (*Wright*).) It is insufficient, however, for a petitioner to show that the false testimony was merely “relevant to a material issue and that the true facts would have been helpful to the defense” (*id.* at p. 809); he or she must instead establish “ ‘ “there is a ‘reasonable

probability’ that, had [the false evidence] not been introduced, the result [of the trial] would have been different.” ’ ” (*Richards II*, *supra*, at p. 312; *In re Roberts* (2003) 29 Cal.4th 726, 742.) “ ‘The requisite “reasonable probability,” . . . is such as undermines the reviewing court’s confidence in the outcome’ ” and “ ‘is dependent on the totality of the relevant circumstances.’ ” (*In re Malone* (1996) 12 Cal.4th 935, 965.)

B. *Ablott’s and Franklin’s Conclusions Regarding the Cause and Origins of the Fire Do Not Constitute False Evidence*

Parks argues that Ablott’s and Franklin’s overall conclusions regarding the cause and area of origins of the Bell fire—namely, that the fire had multiple areas of origin and was incendiary—constitute false evidence in two related respects. We disagree as to both, for reasons we set forth in turn below.

1. *The absence of flashover is not an essential basis for the investigators’ conclusions that the fire was incendiary*

All experts now agree Ablott was wrong in concluding that flashover did not occur anywhere in the home. Parks argues that, because Ablott’s and Franklin’s analyses of the fire scene were based on this (now known to be likely incorrect) conclusion regarding flashover, their ultimate conclusions that the fire was incendiary constitute false evidence. We disagree.

Ablott and Franklin concluded that the fire was incendiary based in part on Ablott’s interpretation of the fire scene as reflecting multiple points of origin. Ablott acknowledged that this interpretation of the fire scene was based in part on an understanding that flashover did not occur. He further acknowledged that, were he to learn flashover had in fact occurred,

he would want to reassess the fire scene with that in mind. But both Ablott and three experts testifying at the evidentiary hearing concluded that, even taking into account that flashover had occurred, each would still conclude the fire was incendiary and had multiple points of origin. The current state of fire investigation science reflected in the evidence Parks has presented does not prohibit concluding a fire had multiple areas of origin based on post-flashover burn patterns—it merely cautions the investigator to be aware of the potentially misleading effects flashover, full room involvement, and ventilation can have on those patterns when interpreting them. Three prosecution experts who testified at the evidentiary hearing did just that, and still agreed with the original investigators’ ultimate conclusion regarding the cause and origin of the Bell fire.

Parks’s experts at the evidentiary hearing disagreed that the burn patterns could still provide a reliable basis for identifying multiple points of origin. But this establishes only that two sets of experts can reasonably reach differing opinions as to whether a fire investigator can use post-flashover burn patterns as a basis for identifying multiple points of origin in a ventilation-controlled, full room involvement fire. Such difference of opinion does not establish that the current science of fire investigation prohibits or even significantly undermines a resulting identification of multiple points of origin.⁹ Indeed, fire investigation science is not a “pure

⁹ Our conclusion in this regard is further bolstered by the fact that the trial court relied on the ongoing debate between experts at the evidentiary hearing regarding the interpretation of the Bell fire scene to deny Parks’s petition, and in so doing implicitly concluded that no one expert or set of experts is more credible than the other. Because we give great deference to the trial court’s credibility

forensic science,” but rather, as defense expert Bieber testified, involves “subjective” interpretation that distinguishes it from “true scientific measure.” Therefore, reasonable, qualified fire investigators may have “different interpretations of certain things,” and investigators disagree about evaluating a fire scene “everyday.”

Thus, Parks has failed to establish by a preponderance of the evidence that, by current standards, it is improper to interpret post-flashover burn patterns, such that Ablott’s incorrect conclusion regarding flashover was necessarily an “underlying fact[] essential to [his] inferential method and ultimate opinion” that the burn patterns in the Bell fire reflected multiple points of origin. (See *Richards I, supra*, 55 Cal.4th at p. 973 (dis. opn. of Liu, J.).)

Moreover, even if Ablott’s incorrect conclusion regarding flashover *did* undermine his conclusion that there were multiple points of origin, the multiple points of origin were not the only basis for his and Franklin’s opinion that the Bell fire was incendiary. They also based that opinion on the presence of what they viewed as a failed incendiary device similar to the cause of the Lynwood fire, on having ruled out the electrical appliances as potential sources of the fire, and on their conclusion that the closet door had been closed and barricaded during the fire. NFPA 921 permits reliance on such circumstantial evidence in classifying a fire. And as noted above, ongoing expert debate at the evidentiary hearing regarding whether the circumstantial evidence in this case supports such a classification does not render that classification false evidence under section 1473, subdivision (b). Thus, even if Ablott’s

determinations (*In re Resendiz, supra*, 25 Cal.4th at p. 249), we decline, as Parks implicitly asks us to do, to conclude that the prosecution’s experts at the evidentiary hearing were wrong or less credible than the experts offered by Parks at the evidentiary hearing.

conclusion that flashover did not occur *were* an essential factual predicate to his conclusions regarding multiple points of origin, it would not be an essential factual predicate to his and Franklin's overall conclusion the fire was incendiary. Ablott's conclusion regarding flashover is thus not "akin to [a] perceptual premise of . . . eyewitness testimony shown to be false." (*Richards I, supra*, 55 Cal.4th at p. 974 (dis. opn. of Liu, J.).)

Parks argues that her situation is similar to that present in *Richards II*, because the expert in that case was interpreting something (a photograph) later determined to be other than what the expert initially believed (i.e., an accurate depiction of a lesion on the victim). Parks argues that this is comparable to Ablott opining on the source and cause of the Bell fire by interpreting what Ablott believed to be a fire scene unaffected by flashover, a belief now known to be likely incorrect. But a crucial difference between the photograph determined to be inaccurate in the *Richards* cases and the conclusion here regarding flashover is that, without the photograph in the *Richards* cases accurately depicting the lesion, no basis remained on which the expert could have concluded that the lesion matched the defendant's dentition, because there was no other evidence regarding what the lesion looked like. Thus, the photograph was "crucial" to the expert's ultimate opinion. (*Richards I, supra*, 55 Cal.4th at p. 974 (dis. opn. of Liu, J.) ["[a] crucial fact underlying all of [dental expert's] testimony was that the single photograph of the victim's hand was alone a sufficient basis for reaching his ultimate conclusion"].)

In his dissent in *Richards I*, Justice Liu contrasted this with a situation like the one here, noting that "[t]here will no doubt be cases where it is more difficult to determine whether the falsity of one or more facts underlying an expert's trial testimony renders the entire opinion false. In many cases, an expert opinion may be based

on a variety of facts, and the falsity of one fact might not undermine the expert's ultimate conclusion.” (*Richards I, supra*, 55 Cal.4th at p. 975 (dis. opn. of Liu, J.).) The record amply supports that this is the case here.

2. *Advancements in fire investigation science do not render Ablott's and Franklin's opinions that the Bell fire was incendiary false evidence*

Parks also argues that general advances in fire science and fire investigation methodology since trial fatally undermine Ablott's and Franklin's overall analyses of the Bell fire scene, and that it is impossible to conclude, consistent with current science and methodology, that the Bell fire had multiple points of origin and/or that the fire was incendiary. She argues that the investigators were only able to reach this conclusion because they employed improper negative corpus methodology, and because their investigation was infected by confirmation and expectation bias. On these bases, she argues that Ablott's and Franklin's ultimate opinions that the Bell fire was incendiary constitute false evidence.

Parks's argument relies on numerous different aspects of modern fire investigation science she argues reflect the type of “later scientific research or technological advances” referred to in section 1473, subdivision (e)(1). We address each in turn below.

a. *Increased understanding of the role of flashover and ventilation in burn patterns and determining multiple areas of origin*

First, Parks points to the increased understanding of and guidance regarding the effects of flashover and ventilation on burn patterns, and how these factors can render post-flashover burn pattern analysis, particularly in a ventilation-controlled fire, unreliable. Parks notes that “[i]t is now well understood that

factors such as flashover, full room involvement, and ventilation can cause the appearances of or erase patterns of multiple fires in a compartment.” She points to NFPA 921’s “direct[ion] [that] an investigator consider[] these factors when there is a possibility of multiple origins,” and argues that Ablott’s and Franklin’s application of “pre-flashover, pre-full room involvement methodologies” to opine that there were multiple areas of origin in the Bell fire is “not scientifically defensible” under current standards.

This argument overlaps with the underlying premise of the argument we address above regarding Ablott’s opinion that flashover did not occur, and how that opinion affected his overall conclusions regarding the Bell fire. As we noted in discussing that argument, the evidence Parks has offered does not establish that interpreting post-flashover burn patterns or burn patterns in a ventilation-controlled fire is impermissible under current fire investigation science and best practices. Nor does it establish that doing so as a means of identifying multiple areas of origin is a necessarily flawed methodology. Rather, the studies and other authority in the record reflect that modern fire investigation science more fully understands what both the defense and prosecution experts acknowledged at trial: that flashover, full room involvement, and ventilation effects make reading burn patterns difficult, and that a fire investigator should keep these factors in mind and exercise caution in interpreting a fire scene, because they may otherwise create false indicators of an area of origin.

We acknowledge that Parks’s experts at the evidentiary hearing went beyond the express words of these studies and authorities and opined precisely as Parks argues in her petition: that interpreting post-flashover burn patterns in a ventilation-controlled fire is a fatally flawed methodology under

modern fire investigation standards, and that Ablott's and Franklin's ultimate conclusions thus cannot stand in light of current scientific understanding. But NFPA 921—which Parks touts as “articulat[ing]” the “gold standard” for fire investigation—does not include the more extreme interpretation of current standards reflected in the defense experts' testimony. Moreover, for each defense expert espousing this view at the evidentiary hearing, there was at least one prosecution expert offering the opposite view. As noted above, that reasonable experts disagree about the appropriateness of interpreting post-flashover burn patterns does not establish that doing so renders the resulting opinion “false evidence” under section 1473, subdivision (e)(1). Indeed, the continuing expert debate at the evidentiary hearing here is in stark contrast with *Richards I* and *Richards II*, in which “all [of the] experts testified that the photograph did not provide a sufficient basis for [the dental expert] to conclude at trial that the lesion was a bite mark consistent with petitioner's teeth.” (*Richards I*, *supra*, 55 Cal.4th at p. 975 (dis. opn. of Liu, J.), italics added.) Justice Liu found this unanimity of the experts at the evidentiary hearing significant in concluding Richards had established the dental expert testimony was false evidence, noting that Richards's case “[was] *not* a case in which a habeas corpus evidentiary hearing has devolved into a fresh battle of the experts.” (*Ibid.*, italics added.) Precisely such a battle occurred at the evidentiary hearing in this case.

Finally, we find unpersuasive Parks's argument that, given the lack of research on the error rates of post-flashover burn pattern analysis at the time of trial, the prosecution experts “grossly misinterpreted to the jury their ability to properly analyze the [burn] patterns and come to accurate conclusions regarding the origin, cause, and classification of the fire.” According to Parks,

Ablott and Franklin were free to opine with absolute certainty regarding the cause and origin of the Bell fire, something they could not do today, given the additional studies on error rates in burn pattern analysis, and because such opinions would be inconsistent with “current practices.” But current science and practices would not prevent an expert today from offering the same “definitive[]” conclusions reached by Ablott and Franklin, because none of the scientific articles, studies or standards Parks identifies prohibits an expert from interpreting post-flashover burn patterns in a ventilation-controlled fire. Indeed, at the evidentiary hearing, three well-qualified experts concluded they could (and did) do just that. Moreover, at Parks’s trial, *both* prosecution and defense experts testified “unequivocal[ly]” about their interpretation of the fire scene, and neither side’s expert testimony went unchallenged. True, Parks could not challenge Ablott’s and Franklin’s opinions with studies available today that attempt to quantify the error rates of burn pattern analysis. But it is simply not true that the jury “was presented with no scientifically supported alternate explanations to challenge the prosecution’s experts.” The key concept underlying such a challenge—that flashover and ventilation can affect burn pattern analysis and create false indicators of an area of origin—was recognized in some form at the time of Parks’ trial and discussed in expert testimony presented by both sides at trial. Indeed, qualified experts on both sides at the 2017/2018 evidentiary hearing reached largely the same conclusions as their counterparts at trial had decades earlier, and for largely the same reasons. Advances in fire science available today would have provided more fodder for the defense in this debate at trial—for example, studies that attempt to quantify a specific error rate in what both sides acknowledge is an inherently subjective discipline.

But this is insufficient for the expert trial testimony to qualify as false evidence under section 1473, subdivision (e)(1).

People v. Johnson (2015) 235 Cal.App.4th 80 (*Johnson*) is instructive on this point. In *Johnson*, the defendant had been civilly committed as a sexually violent predator based on a prosecution expert diagnosing him with a paraphilic coercive disorder. (*Id.* at p. 85.) At trial, the defense experts “disagreed with the state’s experts about Johnson’s diagnosis[,]” testifying that “although it can be a valid diagnosis, paraphilic coercive disorder is very rare” and “is controversial within the scientific community.” (*Id.* at p. 86.) Defense experts at trial further opined that Johnson did not even have the disorder. (*Ibid.*) In a habeas petition, Johnson sought relief under section 1473, subdivision (e)(1), based on paraphilic coercive disorder having since been removed from the Diagnostic and Statistical Manual of Mental Disorders (DSM). The court denied the petition, explaining that, although this change in the DSM “may cast additional doubt on the validity of” Johnson’s diagnosis (*id.* at p. 89) and “might have bolstered Johnson’s arguments if introduced at trial” (*id.* at p. 92), it “[did not] completely undermin[e] the state’s case” or “reflect[] scientific research that undermines expert testimony diagnosing that disorder and renders that testimony false evidence.” (*Id.* at pp. 90–91.) Parks attempts to distinguish *Johnson* based on the validity of Johnson’s diagnosis having been “fully litigated at Johnson’s trial” and Johnson having been “able to cross-examine [the prosecution’s] experts and present the testimony of his own experts.” (*Id.* at pp. 91–92.) Parks argues that, unlike in *Johnson*, the evidence she offers to support her petition does not “simply elaborate[] upon the testimony of . . . experts below” (*id.* at p. 91), because, unlike in *Johnson*, the relevant issue “was not fully litigated; the jury was misled to disbelieve flashover had occurred,

[and] did not get the full explanation of the effects of flashover, full room involvement, or ventilation.” (Italics omitted.) But this is a question of degree. The potential for flashover to incorrectly suggest an area of origin was unquestionably acknowledged by both prosecution and defense experts at Parks’s trial. In addition, Lowe challenged Ablott’s conclusion that flashover had not occurred, as well as Ablott’s ability to interpret post-flashover burn patterns. Thus, additional scientific understanding about the effect of flashover on burn patterns that Parks identifies, as well as the consensus in recent expert testimony that flashover did occur, merely elaborates on an issue litigated below—albeit perhaps more so than was the case in *Johnson*.

b. *Negative corpus*

Parks further argues that Ablott and Franklin employed a “negative corpus” methodology in determining the cause of the fire, which NFPA 921 does not permit. But NFPA 921 defines improper negative corpus methodology—as opposed to the acceptable process of elimination reasoning that Parks acknowledges is part of the scientific method—as determining the cause of a fire when there is “no evidence to support it [the cause],” and thus based solely on ruling out all accidental causes. The record does not reflect that the investigators did this in determining the cause of the Bell fire. True, Ablott agreed when asked whether he employed “negative corpus” methodology and whether he concluded the fire was incendiary based on ruling out other sources. But his further testimony regarding additional bases for his conclusion that the fire was incendiary belies any argument that he employed a “pure” negative corpus methodology of the type rejected in NFP 921. The record reflects that he and Franklin instead relied on their interpretation of multiple pieces of evidence to reach that

conclusion—namely, the cut electrical cord, closet door, and burn patterns. Parks criticizes Ablott’s and Franklin’s interpretations of this evidence as reflecting, respectively, a failed incendiary device, barricaded closet door, and multiple areas of origin, arguing that the evidence is more consistent with innocent explanations than with a conclusion that the Bell fire was set by human hand. But Parks’s criticisms of the way the investigators interpreted evidence do not establish that the investigators had no evidentiary basis for concluding the fire was incendiary, other than the exclusion of accidental sources. Thus, even if Parks’s criticisms have merit (which we do not conclude), they would not establish that the investigators engaged in improper negative corpus methodology.

c. *Expectation and confirmation bias*

Finally, Parks argues that current guidelines recognize the risks of investigator expectation and confirmation bias in fire investigation, and that Ablott’s and Franklin’s investigations of the Bell fire were tainted by such bias. The fundamental premise of Parks’s argument appears to be that the investigators ignored evidence that pointed towards innocent explanations for the Bell fire in an effort to confirm a suspicion—which arose after learning Parks’s previous home had burned down—that she had started the fire. Parks argues that the evidence the investigators relied on to support this conclusion is more consistent with these innocent explanations than with their conclusion of arson at Parks’s hand. She further notes that Ablott and Franklin initially viewed the Bell fire as likely accidental, and only changed their views after learning that Parks had been involved in a previous home fire.

Significantly, neither NFPA 921 nor any other source cited by Parks requires or suggests specific protocols or practices in order to shield an investigation from such expectation or confirmation

bias—let alone any practices that were not followed in the original investigation. Although defense expert Bieber suggested bias could be minimized by restricting the scope of a fire investigation to determining the origin and cause of a fire, leaving the classification of the fire (i.e., as intentional, accidental, or undetermined) to police officers or insurance adjusters, he acknowledged that this is neither industry practice nor required by NFPA 921, and the other defense experts at the evidentiary hearing expressly disagreed with his suggestion. The NFPA 921 expressly permits consideration of circumstantial evidence to determine the classification of a fire, as Ablott and Franklin did here.

Moreover, although current fire investigation methodology certainly recognizes the risk of confirmation and expectation bias in fire investigations, we agree with the trial court that these “are not at all new phenomena and were known when the original investigation occurred. Thus, this is not a matter of new science discrediting old science, but rather a dispute as to the propriety of Ablott’s investigation.”

Finally, even assuming a critique of the original investigation as reflecting bias can properly form any basis for habeas relief in connection with a false evidence claim under section 1473, subdivision (b), Parks has not made the necessary showing to establish confirmation or expectation bias in the original investigation by a preponderance of the evidence. The record does not support that Ablott interpreted the evidence in a manner driven by bias, as opposed to driven by logical inferences drawn from available facts and evidence. That Parks (and the experts she offered at trial and the evidentiary hearing) disagree with the inferences Ablott drew does not render them illogical or the product of bias. For example, Parks faults Ablott for dismissing the possibility that the cuts in the electrical cord could have been

made during overhaul, as opposed to by human hand. But a forensic engineer testifying at trial examined the cord and concluded it had been cut with a knife or sharp object, something that could not be accomplished by a shovel damaging it during overhaul. There is nothing unreasonable about Ablott relying on this forensic examination and concluding that the cord was part of a failed incendiary device—particularly given the cause of the Lynwood fire, which had been explained to Parks. Moreover, at trial, Lowe offered an alternative explanation for the cuts in the wire (that they were the result of overhaul), which the jury was free to consider. Similarly, defense and prosecution experts offered competing interpretations of the evidence related to the northeast closet door. Parks’s view that one of multiple interpretations of the evidence presented to the jury is better or more plausible does not support the conclusion that the investigator’s interpretation must have been driven by bias.¹⁰

¹⁰ The amicus brief filed by the Innocence Network argues that Parks’s conviction also “raises troubling issues regarding the prosecution’s use of bias against female criminal defendants. Throughout their closing arguments, the [s]tate made numerous prejudicial comments concerning Parks’[s] lack of serious injury resulting from the fire, her lack of ‘maternal instincts,’ and her general demeanor, as indications of her guilt.” Such comments are not a basis for concluding any false evidence was offered against Parks that might entitle her to relief under section 1473, subdivision (b), however. And even assuming that some of these comments were improper, the record does not support that these comments had such an effect on the overall trial as to render it fundamentally unfair and thus a violation of her right to due process.

**C. *Ablott’s Testimony That Flashover Did Not Occur
Is False Evidence, But Is Not Substantially
Material to Parks’s Conviction***

We agree with the trial court that Ablott’s conclusion flashover did not occur in the Bell fire was false evidence under section 1473, subdivision (e)(1), because all experts at the evidentiary hearing concluded that flashover did occur.

But in order for the introduction of such false evidence to warrant relief on her petition, Parks must establish by a preponderance of the evidence that it is “reasonabl[y] probab[le]” that, had Ablott’s flashover testimony “ ‘ “not been introduced, the result [of the trial] would have been different.” ’ ” (*Richards II*, *supra*, 63 Cal.4th at p. 312.) She has not done so.

First, for the reasons discussed above, there is not a reasonable probability that, without Ablott’s conclusion that flashover had not occurred, Ablott would have reached a different ultimate opinion on whether there were multiple areas of origin and/or whether the fire was incendiary. Second, the prosecution acknowledged at trial that arson investigation evidence “can be inconclusive,” and argued at trial that, even if one were to ignore expert testimony interpreting the burn patterns as reflecting multiple areas of origin, the remaining evidence presented established guilt beyond a reasonable doubt. Specifically, the prosecution cited testimony and forensic evidence suggesting the electrical cord was part of a failed incendiary device; the fact that Parks’s previous home had burned down as a result of a mechanism similar to that apparently employed in the failed incendiary device; evidence suggesting the northeast bedroom door had been barricaded during the fire; and the condition of Parks’s physical person the night of the fire, which the prosecution argued was inconsistent with her claim that she attempted to save her

children. The prosecution’s interpretation of this evidence did not depend on Ablott’s conclusion that flashover did not occur.¹¹ Parks argues forcefully that the evidence on each of these points is open to an alternative interpretation that does not suggest Parks is guilty. But the jury was presented with essentially these same alternative interpretations—including through an expert witness (Lowe). The fact that, were the case to be tried today, the defense could present these same critiques with more force than it did at the original trial by drawing on additional scientific study and technology not available then is insufficient to support a reasonable probability that such fortification would change the outcome of the trial. (See *Wright, supra*, 78 Cal.App.3d at p. 809 [habeas petition must show “more than . . . that the true facts would have been helpful to the defense” on a material issue].)

Parks stresses that the standard governing the requisite effect of the false evidence is not one looking for mere substantial evidence to support the verdict, absent the challenged evidence, but rather one looking to whether the false evidence prejudiced Parks at trial. (See *Richards II, supra*, 63 Cal.4th at p. 312.) We agree. But the standard does not require just *any* amount or type of prejudice; rather, it requires Parks to show, by a preponderance of the evidence, a “reasonable probability” that the outcome of

¹¹ In her briefing and petition, Parks repeatedly cites portions of the prosecutor’s closing argument that criticize Lowe for focusing on flashover to rebut Ablott’s and Franklin’s opinions. Parks suggests that this reflects how central a lack of flashover was to the prosecution’s case. But the prosecutor made these arguments during a portion of his closing that he explained was aimed solely at rebutting the version of events Parks had offered, and repeatedly noted that such rebuttal did not relieve the prosecution of its duty to prove guilt beyond a reasonable doubt.

the trial would have been different. (*Ibid.*) Given the state of the evidence set forth above and in the factual summary, we cannot say that she has done so.

A comparison with the facts and procedural history leading up to *Richards II* is again informative here. In that case, there had been two hung juries before Richards was ultimately convicted in a third trial. “The main difference between the two trials ending in hung juries and the final trial ending in a guilty verdict was the bite mark evidence”—that is, the subject of the dental expert’s testimony—“which was offered only at the final trial.” (*Richards I, supra*, 55 Cal.4th at p. 981 (dis. opn. of Liu, J.)) Here, there is no such procedural history suggesting that Ablott’s conclusion regarding flashover was a deciding factor in classifying the fire as incendiary—let alone a deciding factor in identifying Parks as the source of the fire. In addition, in the *Richards* trial, “[t]he purported bite mark was the evidence that most directly linked petitioner to the crime.” (*Ibid.*) The same cannot be said even for Ablott’s conclusion that flashover did not occur.

Parks counters that to conclude expert fire scene analysis and opinion on the cause of the fire at trial did not play a pivotal role in convicting Parks is to underestimate the power, in the minds of lay jurors, of hearing a highly qualified expert present opinions with absolute certainty, because lay jurors are not equipped with the knowledge to themselves assess the truth or reliability of such testimony. But the mere fact that testimony is offered by an expert, or that the expert expresses certainty in his or her expert opinions, cannot form part of the basis for concluding that such testimony substantially affected the outcome of a trial. First, in this case, Parks presented her case through experts as well, who would have enjoyed a similar amount of reverence from the jury by virtue of their expert stature, and who likewise presented their opinions

as “unequivocal.” Second and more broadly, *all* evidence analyzed under section 1473, subdivision (e)(1) is expert testimony, yet the statute does not exempt such evidence from the broader section 1473, subdivision (b) requirement that false evidence have played a significant role in the trial in order to warrant habeas relief.

D. *Parks Has Not Established That Her Right to Due Process Was Violated*

Parks separately argues that the introduction of Ablott’s testimony also violated her due process rights under the Fourteenth Amendment by rendering her entire trial unfair, and that this provides another basis for granting her petition.

Admission of unreliable scientific evidence becomes an issue of federal due process if it is “so extremely unfair that its admission violates ‘fundamental conceptions of justice.’” (*Dowling v. United States* (1990) 493 U.S. 342, 352.) The United States Supreme Court has “defined the category of infractions that violate ‘fundamental fairness’ very narrowly.” (*Ibid.*) The introduction of unreliable evidence thus implicates due process only when such evidence is “ ‘ “of such quality as necessarily prevents a fair trial.” ’ ” (*Duncan v. Henry, supra*, 513 U.S. at p. 370, fn. 1.) In order for this to be the case, the evidence must not only be unreliable or false, but be so in such a way that “the factfinder and the adversary system will not be competent to uncover, recognize, and take due account of.” (*Barefoot v. Estelle* (1983) 463 U.S. 880, 899, superseded by statute on other grounds as stated in *Slack v. McDaniel* (2000) 529 U.S. 473, 483–484; see also *California v. Green* (1970) 399 U.S. 149, 186, fn. 20 (conc. opn. of Harlan, J.) “[d]ue process does not permit a conviction based . . . on evidence so unreliable and untrustworthy that it may be said that the accused had been tried by a kangaroo court”].)

Parks argues that because “the trier of fact operated under the false assumption that the scientific evidence at issue was valid and reliable, there was no meaningful adversarial testing of the false evidence[,] . . . [which made] the introduction of the now discredited evidence, . . . proffered to the jury as infallible scientific evidence of guilt, . . . so unfair it resulted in a breakdown in the adversarial process in violation of [Parks’s] right to due process.” (Internal quotation marks and citation omitted.) To the extent Parks’s argument is aimed at any testimony other than Ablott’s conclusion that flashover did not occur, her argument fails for the same reasons such testimony does not constitute “false evidence” under section 1473, subdivision (e)(1). Namely, as discussed in detail above, the trial and evidentiary hearing evidence reflects that, with the exception of Ablott’s testimony that flashover did not occur, the expert opinion testimony given at trial was not fundamentally unreliable or incorrect under modern standards, but rather subject—then and now—to criticism and expert debate, which the jury was itself equipped to assess. Parks argues that the studies and increased understanding since the trial provide more scientific support for the defense in this debate than existed at the time of trial, something we do not dispute. But this does not render the defense expert’s criticisms at trial so useless as to support the requisite conclusion that the jury and adversarial system were incapable of taking them into account.

To the extent Parks’s due process claim based on Ablott’s testimony that flashover did not occur, such evidence was, as we conclude above, false, and thus unreliable. But the record does not support that the introduction of this testimony infected the entire proceeding such that the trial can be deemed fundamentally unfair. Indeed, for the reasons outlined above, Parks has not established a reasonable probability that the outcome of the trial would even be

different, had the testimony about whether flashover occurred not been offered and/or had Ablott concluded, as he and all experts today agree he should have, that flashover did in fact occur.

**E. *A Final Note Regarding Parks’s Evidence of
Advances in Fire Investigation Science***

Parks included in her supporting evidence studies reflecting that the types of issues she argues tainted the Bell fire investigation are common in investigations of that time period, and have led to the reversal of numerous arson convictions, many of which she cites in her petition. With our decision today, we do not intend to dispute that there have been great improvements in fire investigation methods, or to deny that advances have been made in the understanding of how fire behaves and how to interpret burn patterns. The salient question for purposes of Parks’s petition, however, is not a general one regarding the relative state of fire investigation science in at the time of trial and now. “False evidence” under section 1473 is defined by the role of an improved science or technology in the expert opinion at issue; relief under that statute also depends on the role such testimony played in a particular case. Thus, that the advances in fire investigation science Parks cites in her petition have led courts in other cases to conclude expert testimony in those cases constituted false evidence does not dictate the outcome of the instant petition. For this same reason, our denial of Parks’s petition does not suggest that these same advances in science might not support a successful habeas petition under different facts, depending, as section 1473 instructs, on the effect of the changes on the testimony at issue and the totality of the evidence presented at trial.

DISPOSITION

The petition for a writ of habeas corpus is denied.
CERTIFIED FOR PUBLICATION.

ROTHSCHILD, P. J.

We concur:

CHANEY, J.

BENDIX, J.